A MONOGRAPH OF THE AUSTRALIAN DRYOPIDAE. ORDER—COLEOPTERA.

By H. J. Carter B.A., F.E.S., and E. H. Zeck.

(Plates i. to vii.)

[*Fore-note by H. J. Carter.*

While personally responsible for the collecting, or getting collected, the new species described I found the necessary examination of details, especially the dissection of the palpi, required the work of a younger eye and hand than mine if any real value could be attached to the new genera, and their correlation with existing genera occurring in other regions noted.

Mr. Zeck's special gifts as an entomological artist and as an experienced worker on minute Coleoptera, pointed to him as the ideal collaborator for this Monograph, and I wish here to record my great indebtedness to him for the added interest and value due to his work.]

After a full consideration of the "Recommendations"—in the nature of advice "of the British National Committee on Entomological Nomenclature," at Art 5 [Proc. Ent. Soc. Lond., 1928, p. 8R] we are of opinion that the ordinary rule of priority should apply to the family name. The facts are as follows:—

Dryops Oliv., Encycl. Méthod., vi., 1791, p. 297, precedes its synonym.
Parnus F., Ent. Syst. I., 1792, p. 245.

By far the clearest classification and tabulation of the genera of the family is that of Ganglbauer, in his famous work, "Käfer von Mitteleurope," 1904, p. 95, who then employed the family name Dryopidae. In the catalogue of Junk, now in general use, the family is edited by Zaitzev, 1910, under the name Dryopidae. The name has thus been in use for 25 years, and is recognized by a second authority 19 years ago. We are, moreover, following Ganglbauer's limitation of *Helmis* and other genera, and cannot consistently reject his authoritative opinion on the nomenclature.

The Dryopidae have been generally neglected by Australian collectors until recently, only nine species having been recorded previous to 1926. They are extremely numerous in individuals in Tasmania, Victoria and certain parts of New South Wales. Thus in a few days' visit in November, 1926, to the Allyn and Williams Rivers, with the help of Mr. John Hopson and Mr. C. Barrett, one of us collected no less than twenty different species, some in considerable numbers. In September, 1928, six species were captured in Galston Creek, near Hornsby, N.S.W., mostly on one log. Clear mountain streams, of which the above are typical, are specially suited to these curious and interesting beetles, whose life-history is very imperfectly known. Mr. A. J. Nicholson has taken the larvae of some undetermined species in two or three localities near Sydney, and one of us found larvae in the Williams River that cannot be correlated with any special imago. We are greatly indebted to Messrs. C. Barrett, J. E. Dixon, C. Oke and F. E. Wilson for their help in searching the Victorian streams and for sending specimens. The beetles are small, varying from one to five millimetres in length, and quite unable to swim, for which they have no adapted organs. They have a specific gravity greater than that of water, since when placed in water they invariably sink; but apparently obtain air from a surrounding aura due to a fine, felt-like coating, mostly on their ventral surface. This, however, as indeed the physiology in general of this family, needs investigation. One of us has kept living examples in a bowl of water for five months, without detecting any apparent attempt on the part of the beetles to reach the surface. Twenty-two examples, including *Notriolus*

galstonius, *Coxelmis novemnotata* and *C. trinotata* were thus kept alive in a bowl for five months. All we have seen are winged, and, frequently when examining a log taken from the river, some of them flew away as they dried in the sun. In two instances were found a *Sclerocyphon* sp. (Dascillidae) in the same habitat (Williams River) as noted by Lea and Carter in Tasmania.

The smaller species require care in handling and setting, being generally covered with slime or mud which obscures their characters. The dissection and mounting for examination minute organs like the palpi in the smaller species is no easy task, so that it is not surprising that few authors record the number of segments, even in the maxillary palpi, in describing new genera. Many authors describe the head as retractile; but this is only true of certain groups; and, so far as we have been able to examine, only partially so in any. Thus in *Kingolus* (*Elmis*) *metallicus* King, the head, in general sub-horizontally or obliquely placed, is capable of being moved into a vertical position, when the upper surface of the head (including eyes) forms a sort of operculum to the prosternal opening, the maxillae and palpi disappearing under the nozzle which then overlaps the prosternal lip.

We have found in the structure of the prosternum good characters for differentiating both genera and species. Plate v. clearly illustrates this and should be followed in conjunction with descriptions of new genera and species.

In 1864, the Rev. R. L. King described seven species under three genera, *Lutochrus*, *Elmis* and *Limnius*. Sharp, in 1882 (Biol. Centr. Amer.) transferred *Lutochrus australis* to *Hydrethus*, and also suggested that King's so-called *Elmis* and *Limnius* species would probably "have to be separated from the European genera so-named." In the same work he also admitted using for Central American species the generic name *Elmis* in the extended sense suggested by Leconte and Horn, and it would appear that Champion has followed a somewhat similar course in describing some Indian species (Ent. Mon. Mag., 1923, p. 170).

Grouvelle has also included under *Helmis* certain Madagascar species with polymorphic characters (Ann. Soc. Ent., Fr., 1906). Blackburn, Lea and Grouvelle have each described an Australian species under the same generic title, which three species seem to require generic differentiation.

After a study of some exotic, including New Zealand forms, kindly lent by the British Museum, as well as others courteously sent by the late Mr. G. C. Champion and Dr. R. J. Tillyard, also by Mr. A. E. Brookes, of Waikato, New Zealand, and of such literature as was available, we are unable to include the majority of the Australian species, so far known, under existing genera.

We propose to adopt the very clear tabulation of Ganglbauer (Käf. Mitteleur, 1904) as a basis for our classification, a tabulation that would definitely deny both *Helmis* (*Elmis*) and *Limnius* to our species, the former by its three-segment maxillary palpi and the structure of head and pronotum, the latter by its clothing and elytral sculpture (with four lateral granular striae). We would definitely refer *Helmis pallidipes* Cart. to the world-wide *Stenelmis* L. Dufour, which already contains species from New Guinea and Sumatra.

The New Zealand Dryopidae are very distinct from the Australian, the two regions having no genus in common. Moreover, their four recorded genera all come under the sub-family *Dryopinae*, in which Australia has only a single genus with two species; while the sub-family, *Helminae*, numerous in Australia, is unrecorded from New Zealand. The sub-family *Psepheninae* is unrecorded in both of these regions.

Genera of Australian Helminae.

1. Antennae with segments 5-11 sub-clavate. .. .. *Stetholus.*
   Antennae filiform. .. .. 2.
2. Fore tibiae with fringe of tomentum on inside. .. .. 3.
   Fore tibiae without fringe of tomentum on inside. .. .. .. 7.
3. Pronotum sub-bilobate (i.e., divided by distinct transverse depression). .. .. 4.
   Pronotum unilobate (without distinct transverse depression). 5.
4. Maxillary palpi 3-segmented, pronotum with short sub-lateral sulcus, claws simple. .. .. *Kingolus.*
   Maxillary palpi 4-segmented, pronotum without sub-lateral sulcus, claws enlarged (subdentate) at base. .. .. *Simsonia.*
5. Widely obovate, pronotum with sub-lateral and medial sulcus, elytra with three lateral ridges. .. .. *Austrolimnius.*
   Elongate-ovate, pronotum without sub-lateral or medial sulcus, elytra uniformly striate-punctate. .. .. 6.
6. Pronotum foliate in front, fore coxae closer than mid, metasternum not channelled, latero-apical margins of elytra serrulate. .. .. *Notriolus.*
   Pronotum deflexed at sides, fore coxae as wide apart as mid, metasternum channelled, elytral margins entire. .. .. *Coxelmis.*
7. Elongate, parallel, pronotum with irregular sub-lateral sulcus elytra striate-punctate, alternate intervals sub-costate. .. .. *Stenelmis.*
   Elliptic, pronotum with sub-lateral carina, elytra sub-granulose with sub-lateral carina. .. .. *Neosolus.*

The sub-family *Dryopinae* at present includes the single genus *Hydrethus* Fairm. (Ann. Soc. Ent. Belg., 1889, p. 90) with two species, *H.* (*Lutochrus*) *australis* King, and *H. leai* Cart., which may be distinguished as follows:—

Form elliptic; elytra coarsely lineate-punctate. .. .. *australis.*
Form more widely ovate; elytra more finely striate-punctate. .. .. . *leai.*

Stetholus *gen. nov.*

Body elongate; head (thickly), pronotum and elytra (chiefly at sides), clothed with short, bristly hair; palpi 4-segmented, terminal segment of the maxillary palpi clavate, of the labial subulate; antennae with two basal segments very tumid and hairy; 1st very long, extending to the exterior margin of eye; 2nd much shorter, ovate, 3 and 4 bead like, each about half as wide as 2; 5-11 transverse, forming a flattened club, more or less perfoliate; 7-10 wider than 5-6 and sub-equal; 11th twice as long as 10, its base truncate, apex rounded.

Head large, free, vertical, incapable of withdrawal within prothorax; eyes large, round and prominent; prosternum very short, without mentonière; the fore coxae globular, placed near the front edge of prosternum, and only separated by the narrow, short, acutely pointed prosternal process; this with medial carina and raised border; mesosternum with deep, round pit mid and hind coxae rather widely separated; legs moderately developed, long, tarsal claws strongly developed. Posterior tarsi with last segment very long (nearly as long as the rest combined).

Pronotum bilobed, anterior lobe the more convex and divided from the posterior by a V-shaped depression; without sub-lateral excavations, anterior angles deflexed, margins feebly explanate behind only.

Scutellum large, triangular with rounded sides.

Elytra sub-parallel, striate-punctate.

The antennae are very similar to those of *Hydrethus australis* King, on a larger scale; but in that species (of which the author did not describe

the antennae) the 1st segment is shorter, the 2nd proportionally longer, the 3rd clearly longer than 4, the 11th less than twice as long as 10, the clavate series (5-11) more compact and fusiform.

The prosternum is shorter than in any other Australian DRYOPIDAE known to us. The protibiae without tomentum.

Genotype: *S. elongatus* n.sp.

STETHOLUS ELONGATUS *sp. nov.*

(Plate ii., Fig. 16.)

Elongate oblong, nitid black (including upper surface of legs), underside of femora, abdomen and sternal regions fawn colour, antennae, first two segments reddish, rest dark brown.

Head large, closely punctate and pilose (especially near eyes and anterior region), eyes large and rather prominent.

Prothorax narrowed and convex in front, sides of hind part arcuately widened to base without explanate margin or lateral border; base strongly bisinuate, posterior angles obtuse, disc rather coarsely punctate with two longitudinal foveae near scutellum, and a larger depression on each side.

Elytra considerably wider than prothorax, shoulders rather squarely rounded; sides sub-parallel (very feebly compressed behind shoulders and little widened behind middle), striate-punctate, the striae very lightly impressed and containing close small punctures; intervals flat and very minutely punctate, those nearer sides showing short fine pubescence. Each elytron with a large sub-glbbous area behind scutellum. Underside impunctate with a fine velvety derm, metasternum very minutely pustulose.

Dimensions: 5.3-6 x 2 mm.

Habitat: New South Wales, Allyn River, at Gresford, Williams River, at Dungog.

Twenty examples are before us taken by Messrs. Barrett and Carter at Dungog, and by H. J. Carter at Gresford, N.S.W.

The characters mentioned in the generic diagnosis sufficiently differentiate this interesting species.

Type: Series on card in Coll. Carter.

Holotype denoted by an arrow.

KINGOLUS *gen. nov.*

Form more or less ovate; glabrous above and below; head partially retractile, antennae filiform; 11 art; segments sub-equal; eyes large, moderately prominent; maxillary palpi 3-segmented.

Prothorax transverse, sub-bilobate, the narrower and more convex anterior part divided from the wider and flatter part by a transverse arcuate depression parallel to the sides and more or less carinate on its external edge; a short clearly excised sub-lateral sulcus extending from base, not (in general) reaching the transverse depression; disc not channelled in middle, base sub-truncate, apex slightly produced in the middle, margins narrowly explanate.

Scutellum large, triangular.

Elytra uniformly striate-punctate.

Prosternum moderately long; its hind process wide and truncate (*metallicus* King and *flavosignatus* n.sp.) or widely rounded (*aeratus* Cart.); the flattened medial area of underside bounded by sinuate ridges, converging between fore-coxae, expanding on metasternum and terminating at hind coxae; mid and hind coxae widely separated, fore tibiae with a narrow fringe of tomentum on inside, legs moderately long.

A genus that we cannot harmonize with recorded genera, though ap-

parently nearest to the E. African *Helminthopsis* and *Helminthocharis* of Grouvelle.

Genotype: *Elmis metallica* King.

N.B.—The fore-coxae are more widely separated than in either *Simsonia* or *Notriolus*. All the species so far recorded are brightly metallic, or metallic variegated with yellow markings.

Kingolus.

Table of Species.

1. Unicolorous, metallic. .. .. 2.
   Unicolorous, with pale maculae. .. .. 6.
2. Form elongate, pronotum much narrowed in front. .. *tyrrhenus* n.sp.
   Form widely obovate. .. .. 3.
3. Upper surface violet bronze. .. .. 4.
   Upper surface coppery. .. .. 5.
4. Pronotum widest at middle, elytral punctures small (pl. 1, fig. 8). .. .. *metallicus* King.
   Pronotum widest behind middle, elytral punctures larger. *aeratus* Cart.
   Pronotum widest at base, elytral punctures irregular. .. .. *heroni* n.sp.
5. Upper surface nitid, sparsely punctate. .. .. *tinctus* n.sp.
   Upper surface sub-opaque, densely and finely punctate (pl. 1, fig. 4) .. .. *cupreus* Cart.
6. Pronotum with yellow markings. .. .. *flavoplagiatus* n.sp.
   Pronotum without yellow markings. .. .. 7.
7. Yellow markings limited to humeral spots. .. .. *yarrensis* n.sp.
   Yellow markings not so limited. .. .. 8.
8. Four elytral maculae clearly defined, 2.4 mm. long. *flavosignatus* n.sp.
   Basal maculae tending to coalesce, 1.8 mm. long. .. .. *quatuor maculatus* King.

Kingolus flavoplagiatus *sp. nov.*

(Plate i., Fig. 3.)

Elongate and narrow, ground colour castaneus brown, sub-nitid, with yellow markings, as follows: Pronotum irregularly so coloured (in general the greater part), elytra with triangular basal area having the longest side extending from behind shoulders to basal third near suture; the apical third (leaving sides and suture brown); this varied by upper surface more largely flavous. Lateral area of underside, tibiae, tarsi and antennae also testaceous.

Head and pronotum finely, regularly, not closely punctate, antennae similar, but narrower than the preceding (*H. flavosignatus*).

Prothorax sub-bilobate—a wide medial area convex throughout, transverse depression towards sides deeper than in *flavosignatus*, the sides more strongly sinuate at their junction with depression; anterior lobe more convex (hooded) and arcuate at apex; anterior angles invisible from above, widest near the feebly bi-sinuate base, sides behind sinuation very slightly rounded, hind angles sub-rectangular, a rather wide concavity within narrow border, a wide and deep sub-lateral longitudinal sulcus, extending over about two-thirds of posterior lobe and terminating anteriorly in sharp point.

Scutellum punctate, shaped as in the preceding.

Elytra slightly wider than prothorax at base, elongate, obovate, a distinct lateral flange becoming obsolete at shoulders; striate-punctate, the striae well impressed, intervals sub-convex in places, generally rather flat, seriate punctures large and round, more closely set than in the preceding

species; intervals minutely punctate, bearing setae more thickly than in *flavosignatus*. Underside coarsely punctate on the darker medial area.

Dimensions: 1.8 x 0.7 mm.

Habitat: New South Wales, Williams River, at Dungog (C. Barrett and H. J. Carter).

Six examples taken are clearly separated from any described species by the combination of small size, elongate, narrow form, pale colour, with irregular markings.

Holotype: In Coll. Carter.

Kingolus (Limnius) quatuor maculatus King.

(Plate i., Fig. 5.)

This species is certainly not a *Limnius* and is clearly a member of the same genus as *Elmis metallica* King. Fifteen examples were taken at Eccleston (Allyn River and Massie's Creek) in October, 1926, which have been compared with King's type in the Australian Museum. Also taken at Galston. As stated by the author, the basal maculae tend to coalesce; the pre-apical maculae are narrow, elongate and are set obliquely, while in most examples there is an indistinct pale vittate interval, parallel to the suture. The pronotum is bilobate and with the elytral intervals, minutely punctate. The latter quite flat.

Dimensions: 1.6 x 0.7 mm.

Except *H. tyrrhenus* and *H. tinctus* n.sp., it is the smallest of the group in which it is placed.

Kingolus flavosignatus *sp. nov.*

(Plate i., Fig. 1.)

Rather widely ovate, nitid castaneous bronze above and below, elytra with two humeral and two elongate sub-apical spots yellow, antennae, tibiae, tarsi and hind border of abdominal segments testaceous.

Head and pronotum with moderately large, sparsely and irregularly placed punctures; antennae linear, apical segment tapering to a point.

Prothorax very partially bilobate, a wide nearly straight transverse depression on each side, leaving rather widely uninterrupted, convex, medial surface; apex arcuate, anterior angles a little produced, base feebly bisinuate; widest near middle, sides moderately rounded, sinuate in front of middle; posterior angles sub-rectangular, with narrow lateral border, slightly varied, having wide punctate concavity (sub-explanate) within, bounded on the inside by a deep longitudinal sulcus, extending from base, but not reaching the transverse depression.

Scutellum sub-ovate, with truncate base, impunctate.

Elytra: Shoulders obliquely rounded, sides slightly widened behind middle, horizontal border distinct; striate-punctate, the striae shallow, seriate punctures round and large, intervals flat, each with a single line of large punctures (of about half the diameter of the seriate) bearing short golden setae. Prosternum densely and coarsely, meso- and metasterna more sparsely but equally coarsely punctate, abdomen with nitid medial area, the segments successively more finely punctate from base to apex; a wide lateral area opaque and impunctate; front tibiae with a sparse fringe of hair on inside near apex.

Dimensions: 2.3 x 1 mm.

Habitat: New South Wales, Allyn and Williams Rivers (H. J. Carter).

Seven examples taken. Also taken at Dorrigo by Mr. W. Heron. It is clearly distinct from all described species by its combination of castaneous

bronze ground colour, four spotted elytra, coarsely punctate surface and rather wide form.

Holotype: In Coll. Carter.

KINGOLUS HERONI *sp. nov.*

(Plate vi., Fig. 75.)

Rather widely obovate; purple bronze above; underside tawny brown; red on pro- and mesosternum, antennae and legs yellow, the former with apical segment, the latter with knees dark.

Head: Antennae rather short and linear; eyes large but not prominent.

Prothorax: Apex bisinuate; medial lobe widely rounded and produced; anterior angles acute and produced; base nearly straight; posterior angles sub-rectangular; lateral border very narrow; strongly bilobed, divided by a deep and slightly sinuate depression; this forming a distinct sinuation at sides; widest at base, thence slightly and arcuately narrowed to the depression; thence nearly straight to apex; disc strongly but not closely punctate, with well marked sub-lateral sulci, parallel to sides, extending from base about one-third way to the transverse depression.

Scutellum: Equilatero-triangular, with rounded sides.

Elytra wider than prothorax at base, widest behind middle, margins entire, rather bluntly and jointly rounded at apex; striate-punctate; the seriate punctures irregular in size; the striae vaguely impressed, intervals flat and themselves irregularly but strongly punctate; the interstitial punctures not as large as the seriate.

Prosternum closely and strongly punctate. the hind process wide, truncate at apex and sub-sinuate at sides; metasternum more finely punctate; abdomen nearly impunctate; claws simple.

Dimensions: 2.1 x 1 mm.

Habitat: New South Wales, East Dorrigo (W. Heron).

Examples sent by Mr. Heron, after whom we name it, as he is one of the few collectors who has succeeded in finding the small species of this family. It is nearest *K. aeratus* Cart., but is distinguished by its pale legs and the very different elytral sculpture (the seriate punctures regular and round in *aeratus*), the intervals more strongly and irregularly punctate.

Holotype: In Coll. Carter.

KINGOLUS TYRRHENUS *sp. nov.*

(Plate i., Fig. 6.)

Rather elongate, narrowly obovate, bright violet bronze, antennae femora, tibiae, tarsi and medial area of underside testaceous, the last shading off to brown towards the sides.

Head and pronotum sparsely and finely punctate, antennae linear, apical segment tapering to a fine point.

Prothorax sub-bilobed, anterior part not entirely divided from the posterior by two wide, shallow, transverse depressions not quite meeting at the middle; apex sub-truncate, base bi-sinuate, all angles sub-rectangular. widest slightly before middle, sides lightly and evenly rounded, much more narrowed anteriorly than posteriorly; lateral border very narrow, with a moderately wide explanate or sub-convex area within this, followed after a short interval by a deep, wide longitudinal sulcus, extending from the base to the transverse division.

Scutellum large, triangular, with rounded sides.

Elytra wider than prothorax at base, widest behind middle, striate-punctate, the striae shallow, seriate punctures round, rather small and well separated, intervals flat and very sparsely punctate, a single irregular row of punctures on each—a narrow lateral border visible from above.

Underside non-pilose, prosternum flat, truncate at apex, hind process wide and widely rounded behind, metasternum finely channelled, sparsely and finely punctate, abdomen apparently impunctate.

Dimensions: 1.7 x 0.7 mm.

Habitat: New South Wales, Allyn and Williams Rivers (H. J. Carter).

Eleven specimens taken and examined. The species could only be confused with *K. metallicus* King, which differs as follows: Colour deeper purple bronze, often with metallic gleams in punctures and sides; legs dark, as also the apical segment of antennae pronotum more strongly bilobed, the depression causing a break in the elytral series; intervals wrinkled and punctate.

Holotype: In Coll. Carter.

Kingolus metallicus King.

We took 32 examples in the Allyn and Williams Rivers. Fresh specimens are a brighter purple bronze than in the type, the punctures showing a metallic sheen; but when viewed in a good light the colour can be seen on the two specimens (of which one is the presumable type) in the Australian Museum, while the sculpture is identical with my specimens. This shows a wide range, King's examples coming from the Murray River.

Kingolus tinctus *sp. nov.*

(Plate i., Fig. 7.)

Widely obovate, clear nitid bronze, antennae testaceous, tarsi and tibiae darker, flavous; underside dark brown.

Differs from *K. tyrrhenus* by its shorter, wider form, deeper purple colour, darker legs and underside; the prothorax is wider, less narrowed in front, the sides a little sinuate near the transverse depression, the pronotum more finely and sparsely punctate, the longitudinal sub-lateral sulci shorter, extending over the basal third only of the posterior lobe; the elytral series coarser, the striae deeper, the intervals flat and sparsely punctate.

Dimensions: 1.6 x 0.8 mm.

Habitat: Allyn River (Mr. John Hopson).

Five examples taken by Mr. Hopson are near *K. tyrrhenus* and *K. metallicus* King, in colour. From the former it is distinguished above; from the latter by its short, wide form, finer pronotal sculpture, with the short sub-lateral excavation and different elytral sculpture.

Holotype: In Coll. Carter.

Kingolus yarrensis *sp. nov.*

(Plate vi., Fig. 79.)

Rather widely ovate, purple bronze, elytra with small pale shoulder spot, tibiae and tarsi (partly) and basal half of antennae yellow.

Head minutely punctate, antennae linear, moderately stout (basal segments about as thick as basal segments of tarsi).

Prothorax bilobate, anterior third separated by a wide V-shaped transverse depression, apex and base a little sinuate, the former lightly emarginate, widest near base, sides here just perceptibly rounded with a tendency to become sinuous near the transverse depression, all angles sub-acute, a narrow sub-explanate margin limited externally by a thin revolute border; on each side a wide and deep sub-lateral sulcus extending over three-quarters of the basal lobe parallel to the sides, these connected behind by a fine transverse depression near base; disc with fine, distant punctures superimposed on a minutely criss-crossed surface.

Elytra widely obovate, as wide as prothorax at junction, enlarging immediately behind this, sides nowhere parallel, margins invisible from above; striate-punctate, the striae shallow, seriate punctures small and distant. intervals flat, sparsely but clearly punctate; underside entirely metallic and dark, without perceptible hair, pro- and meso sternum rather coarsely and sparsely, abdomen more finely and closely punctate; femora and base of tibiae and upper surface of tarsi dark, rest of legs flavous.

Dimensions: 2 x 1 mm. (approximately).

Habitat: Warburton, Victoria (F. E. Wilson).

Three examples sent by their captor can readily be separated from *metallicus, aeratus, tyrrhenus, tinctus* and *leai* by the presence of the shoulder spot and many details of sculpture.

Type: In Coll. Carter.

Simsonia *gen. nov.*

Elongate, head partly retractile, antennae 11-art., filiform, extending to about the middle of prothorax, two basal segments enlarged, apical segment about as long as 9-10 combined; maxillary palpi 4-art.; last segment ovate.

Prothorax elongate, sub-bilobate, divided by a transverse depression (generally more or less V-shaped), the anterior part very convex and forming a hood produced over head; sides more or less sinuate, margins explanate; base bisinuate.

Scutellum sub-circular.

Elytra striate-punctate.

Prosternum rather short, its hind process narrowed and rounded behind. Front coxae closer than the mid coxae.

Metasternum channelled in middle; legs moderately long; tibiae fringed with tomentum, claws, especially the posterior with an enlargement (sub-lobate) at base.

Genotype: *Elmis tasmanica* Blackb.

Simsonia.

1. Upper surface black. .. .. 2.
   Upper surface metallic. .. .. 6.
   Upper surface with four pale maculae. .. *tasmanica* Blkb. (pl. iii., fig. 18).
2. Elytral intervals pilose. .. .. *vestita* n.sp.
   Elytral intervals glabrous. .. .. 3.
3. Pronotum with sub-lateral carina. .. .. *hopsoni* n.sp.
   Pronotum without sub-lateral carina. .. .. 4.
4. Elytral intervals more or less uniform. .. .. 5.
   Third interval callose near base. .. .. *irregularis* n.sp.
5. 5 mm. long; elytral sculpture coarse and deep. .. .. *nicholsoni* Cart. (pl. iii., fig. 23).
   2 mm. long; elytral, sculpture fine and shallow. .. .. *angusta* Cart. (pl. ii., fig. 13).
6. Colour purple bronze, elytral sculpture coarser. .. .. 7.
   Colour brownish bronze, elytral sculpture finer. .. .. *wilsoni* Cart. (pl. iii., fig. 20).
7. Pronotum with sub-lateral carina. .. .. *leai* n.sp.
   Pronotum without sub-lateral carina. .. *purpurea* Cart. (pl. iii., fig. 22).

Simsonia hopsoni *sp. nov.*

(Plate iii., Fig. 24.)

Elongate ovate, convex, nitid black above, dull brown beneath, antennae and tarsi red.

Head and pronotum very finely punctate, eyes little prominent; an-

tennae filiform, short and slender, extending little beyond the apex of prothorax.

Prothorax rather strongly convex, scarcely or very feebly bilobed, the anterior area partly separated by short, shallow depression extending transversely from the side half way to suture, apex much narrower than base, the latter rather strongly bisinuate, sides rounded, weakly sinuate anteriorly, widest behind middle, hind angles a little more than 90 degrees; a very thin lateral border slightly explanate within; disc with a transverse sulcus near base, and two short longitudinal ridges emphasized by depressed area on their inside, towards the sides.

Elytra obliquely widened at shoulders, thence sides nearly straight to the widest part behind middle, apical declivity somewhat steep; striate-punctate, striae deep and wide, seriate punctures very large and round, intervals convex, especially at base and moderately wide—one forming a distinct humeral callus and themselves covered with punctures; pro-, meso- and metasternum rather coarsely, abdomen more finely punctate; mesosternum with a deep pit; fore tibiae with a fringe of hair on inside.

Dimensions: 4.3 x 2 mm.

Habitat: New South Wales, Eccleston (Allyn River and Massie's Creek, H. J. Carter); Williams River (four miles above Salisbury, F. E. Wilson and H. J. Carter); Cox River, near Hartley, Blue Mountains (H. J. Carter).

Eight examples taken during a recent visit to the late Mr. John Hopson, the naturalist of that district, after whom I name it. Others were sent me later by Mr. F. E. Wilson, and a single specimen taken in the Cox River, Blue Mountains, in January, 1927.

By its size and nitid black surface it may be at first confused with *Notriolus barretti* Cart. from the same region, but the bilobed pronotum at once distinguishes it, besides the unusually coarse elytral sculpture, the enlarged tarsi, and the different prosternal structure.

Holotype: In Coll. Carter.

Simsonia leai *sp. nov.*

(Plate i., Fig. 2.)

Elongate, very slightly obovate, dark purple bronze, moderately nitid, legs tarsi and underside dark, the last black or nearly so, basal half of antennae yellow.

Head rather wide, the eyes prominent, antennae linear.

Prothorax bilobate, the anterior lobe more convex, divided from the posterior by an uninterrupted, nearly straight transverse depression, forming a sinuation at the otherwise nearly straight (feebly arcuate) lateral border, this narrowly horizontal within, posterior angle sub-rectangular, base nearly straight. Disc strongly sparsely and unevenly punctate, an indistinct prebasal furrow and a short sub-lateral carina as in *hopsoni*.

Scutellum punctate, triangular with rounded sides.

Elytra considerably wider than prothorax at base, shoulders widely rounded, horizontal border evident from above; striate-punctate, the two sub-lateral striae only well marked and wide, the rest scarcely impressed, seriate punctures unusually large, round and close, intervals convex at base, elsewhere flat, each with a single, irregular line of small punctures and slightly transversely rugose. The whole sternal regions and the basal segment of abdomen coarsely punctate, the rest of abdomen scarcely punctate.

Dimensions: 2.4 x 1.1 mm.

Habitat: New South Wales, Williams River(H. J. Carter, 4 miles above Salisbury). Five examples taken near the camp of the R.A.O.U. in October, 1926. This species is of the size and general outline of *Simsonia purpurea*

and *S. wilsoni*, but may be distinguished by its pronotal sculpture and large seriate punctures of elytra, besides its prosternal structure.

Holotype: In Coll. Carter.

Dedicated to an old friend and fellow coleopterist, A. M. Lea.

Simsonia irregularis *sp. nov.*

(Plate ii., Fig. 14.)

Elongate, ovate, convex, subnitid black above, brown or reddish beneath; antennae tarsi, and (in part) tibiae red.

Head densely punctate, eyes flat, labrum ciliate, apical segment of maxillary palpi wide and truncate, antennae rather short, extending to middle of pronotum, two basal segments much widened, 3-10 very lightly successively widened, 11th about twice as long as ten.

Prothorax bilobate, divided by a shallow V-shaped transverse depression, anterior convex part produced in middle, posterior flatter area with lateral explanation, without medial channel, base bisinuate, sides widest at basal third, thence lightly converging behind, more strongly but nearly straight towards the front; the extreme border lightly raised, entire; hind angles sub-rectangular, front angles rounded off and depressed; disc closely covered with round deep punctures, coarser at sides and base, finer towards apex.

Scutellum oval, narrowed behind.

Elytra at shoulders considerably wider than the base of prothorax, scarcely widened behind middle; striate-punctate, the seriate punctures large and round (very like those in *hopsoni*, except the punctures in 1st stria much larger) the intervals rough, punctate and subgranulose, the 3rd interval near base, also the 6th and 7th near shoulders, with a widened convex elevation, the wide sutural interval also convex, surface near sides with a short bristly clothing; prosternum and flattened part of metasternum strongly and closely punctate, the hind process of the former elongate and narrowly rounded behind, the latter channelled in the middle, abdomen with very fine, shallow punctures, all tibiae with short scaly bristles, the fore tibiae with a fringe of tomentum, claws sub-dentate at base.

Dimensions: 4.5 x 1.8 mm.

Habitat: Upper Barrington River, 4,700 ft. alt. (H. J. Carter).

Two examples were taken near the "Bull-head Crossing" in January, 1927. It is shorter and proportionally wider than *tasmanica* Blkb., its seriate punctures are intermediate in size between those of *tasmanica* and *nicholsoni*, but distinguished from any of the Australian Helminae by the irregular elevations at the base of the elytra.

Holotype and Paratype: In Coll. Carter.

Simsonia vestita *sp. nov.*

(Plate iii., Fig. 19.)

Elongate ovate, black, moderately nitid above, brownish beneath; antennae and tarsi reddish.

Head: Antennae short, lineate, segments 1 and 2 wide, 3-10 sub-equal, 11th rather longer, narrower than preceding and pointed.

Prothorax widest behind middle, thence obliquely narrowed to front, more abruptly to base; anterior angles acute, posterior obtuse; base lightly bisinuate, sides narrowly explanate throughout; disc sub-bilobate, anterior hood-like portion divided from basal area by a lightly impressed V-shaped depression; whole surface strongly and densely punctate, the punctures on the anterior lobe larger and less crowded than those on the basal area. (*N.B.*: In *S. nicholsoni* the reverse is the case).

Scutellum large, round and punctured like the base of pronotum.

Elytra wider than prothorax at base, shoulders rounded, sides subparallel for the greater part, apices conjointly rounded; striate punctate, with rather large round punctures, well separated, in well marked striae; the first two striae more deeply impressed than the others; intervals a little convex, sub-equal in width, strongly punctate and where not abraded clothed with reddish recumbent hairs. Sternal regions coarsely cellulose-punctate, prosternal process bordered at sides, rather sharply rounded at apex; a narrow medial part of abdomen less coarsely but similarly punctate; the punctured area quite glabrous; sides of abdomen with a fine felt-like opacity, apical segment with fringe of hair; tibiae fringed, tarsal hooks slightly lobed at base.

Dimensions: 4.9 x 1.8 mm.

Habitat: Mount Victoria, Western Victoria (Victorian Field Naturalists' Club Expedition) per Mr. F. E. Wilson.

Six examples sent can only be confused with *S. nicholsoni*, the only other species of large size, and black colour. It is, however, easily distinguished by its elytral clothing, the finer and more distant seriate-punctures, the less widely explanate pronotum, with its shallower transverse depression and different sculpture.

Holotype returned to Mr. Wilson for inclusion in the National Museum, Melbourne.

Austrolimnius *gen. nov.*

Form short and widely obovate; head partially retractile; antennae narrowly linear, 11-segmented, 1 and 2 stouter than the rest and subequal, 3-10 equal, 11 much longer than 10, lanceolate; maxillary palpi 4-segmented; pronotum not transversely divided, a sub-lateral sulcus bordered by carina throughout, separating a wide sub-explanate margin from disc; and a well-defined longitudinal medial sulcus.

Scutellum forming a sub-equilateral triangle.

Elytra with three lateral ridges, the two interior (at least) bordered by a row of punctures, the outermost forming the extreme edge, the innermost in a line continuous with pronotal carina; disc with six series of punctures; anterior coxae moderately widely, the medial and post coxae widely separated; prosternal process short and wide, narrowing and rounded at apex; protibiae with fine fringe of hair on inside.

Genotype;. *A. (Elmis) politus* King.

Near *Limnius*, but is without the felt-like tomentum on head and pronotum, the latter clearly canaliculate in the middle and having only three lateral ridges on elytra.

Austrolimnius.

Table of Species.

	Elytra with 4 red spots.	*luridus* n.sp.
1.	Upper surface opaque black.	*montanus* King.
	Upper surface nitid black. . . . . 2.	
2.	Margins of pronotum and elytra (seen from above) entire; post and mid-tibiae of male sub-dentate.	*victoriensis* n.sp.
	Margins of pronotum and elytra (seen from above) serrulate, tibiae simple in both sexes.	*politus* King.

Austrolimnius victoriensis *sp. nov.*

(Plate ii., Fig. 10.)

Rather widely obovate, nitid black above, brownish beneath; palpi, antennae, tibiae and tarsi, also underside of femora pale red; anterior margin of pronotum reddish.

Prothorax wide, convex and produced in front; sides nearly straight, posterior angles rectangular, margins with lateral explanation delimited throughout by sub-lateral sulcus bordered externally by a carina, the extreme border entire, disc with a deep median sulcus, its surface microscopically sub-granulose.

Elytra as wide as prothorax at base, widest behind middle, with three lateral carinate ridges throughout, the innermost forming the continuation of pronotal carina, the two outer closer together, the outermost forming the lateral border, this entire; disc of each elytron with three series of moderately large punctures (larger than in *A. politus* King), besides a row of punctures on inside of carina; general surface like that of pronotum; underside nearly smooth, prosternal process short, wide, rounded at apex; legs rather long, the mid-tibiae of male strongly dentate on inside, a little behind the middle, the hind tibiae of male compressed and widened; in the female the tibiae are normal.

Dimensions: 1.6 x 0.7 mm.

Habitat: Victoria, Healesville and Warburton (Mr. F. E. Wilson); Eltham (Mr. C. Barrett); Fern Tree Gully (Mr. J. E. Dixon).

Fifteen examples examined. It is very near *A. politus* King with which it was at first confused; but clearly separated from that species by the following:—

(a) Less polished surface.
(b) Prothorax longer, more parallel, with reddish front margin medial channel wider.
(c) Less widely ovate elytra.
(d) Margins of pronotum and elytra entire (of *politus* minutely serrate, the marginal carina being finely pustulose).
(e) Legs longer, with sexual characters of mid and hind tibiae.

Holotype and Allotype in Coll. Carter.

Note.—A. politus King (pl. ii. fig. 15); *A. montanus* King (pl. ii., fig. 11).

These scantily described species are readily distinguishable from each other by the opaque surface and the much stronger sculpture of *montanus*. Both have the pronotum with sub-lateral sulcus; the elytra with three carinate ridges as in *victoriensis*, which in *montanus* are more or less pustulose; in *politus* only the outermost very finely so; both have series of punctures on inside of 1st and 2nd carina.

Austrolimnius luridus *sp. nov.*

(Plate vi., Fig. 78.)

Widely ovate; head and pronotum black, anterior margins of the latter reddish; elytra black with four red plagae; antennae, tibiae and tarsi pale red; underside dark, tinged with red; eyes large, not prominent; antennae as in *A. politus*.

Prothorax convex, produced in front, widest at base, sides arcuately converging to apex, posterior angles rectangular, margins entire, lateral explanation delimited by continuous sub-lateral sulcus, disc microscopically subgranulose, with a faintly defined medial sulcus.

Elytra margins finely serrulate, seriate punctures rather more distinct than in *A. politus*, the intervals nitid and laevigate, the middle lateral carina nearer the margin than in *politus*.

Underside apparently impunctate, the prosternal process narrowed and sinuate towards apex, its posterior sides straighter than in *politus* (c.p., pl. v., figs. 34 and 35).

Dimensions:

Habitat: New South Wales, Galston, near Hornsby (Mr. J. Armstrong and the authors).

In February, 1929, we took 15 examples of the above, together with five examples of *A. politus* King. It is clearly distinguished from this species by its patterned elytra, its faintly defined medial line of prosternum and its different prosternal process. The elytral markings consist of two large shoulder and two oval subapical spots, the latter lying immediately within the inner sublateral sulcus.

Holotype in Coll. Carter.

NOTRIOLUS *gen. nov.*

Ovate or elongate ovate. Differs from *Simsonia* in the following characters: Antennae with basal segment less enlarged, the pronotum shorter and more transverse, uni-lobate (i.e., not divided by a transverse depression), sides in general rounded, margins less explanate, base nearly straight. The prosternal process is shorter and wider, truncate or widely rounded behind, claws without evident basal enlargement.

Genotype: *N.* (*Helmis*) *quadriplagiatus* Cart.

NOTRIOLUS.

Table of Species.

1. Upper surface black, concolorous. .. .. 2.
   Upper surface with pale markings. .. .. 5.
2. Very nitid above, pronotum wide and explanate. .. .. .. 3.
   Subnitid, pronotum narrow, scarcely explanate. .. .. *allynensis* Cart. (pl. iv., fig. 27.)
3. Pronotum with transverse ridge, its basal region flattened. .. .. *subplanatus* n.sp. (pl. vii., fig. 23.)
   Pronotum not so. .. .. 4.
4. Pronotum widest at middle, sides evenly rounded. .. .. .. 5.
   Pronotum widest behind middle, sides less rounded. .. .. *barretti* Cart. (pl. iv., fig. 31.)
   Pronotum densely and strongly punctate. .. ..
5. Elytral series almost hidden in deep striae. .. .. *simsoni* Grouv. (pl. iv., fig. 32.)
6. Pale markings limited to humeral maculae. .. .. *humeralis* n.sp. (pl. iv., fig. 25.)
   Pale markings consisting of four elytral maculae. .. .. .. 7.
7. Nitid above, pronotum strongly transverse. .. .. 8.
   Sub-opaque above, pronotum much narrower. .. .. *maculatus* Cart. (pl. iv., fig. 26.)
8. Elytra very convex, sub-gibbous behind scutellum. .. .. 9.
   Elytra normally convex. .. .. *victoriae* n.sp. (pl. ii., fig. 12.)
9. Pronotum widest at middle. .. *quadriplagiatus* Cart. (pl. iv., fig. 29.)
   Pronotum widest behind middle. .. .. 10.
10. Underside black, prosternal process narrowed and rounded at apex. .. .. *galstonius* n.sp. (pl. vii., fig. 82.)
    Underside reddish brown, prosternal process rather widely truncate. .. .. *dorrigoensis* n.sp. (pl. vii., fig. 81.)

NOTRIOLUS DORRIGOENSIS *sp. nov.*

(Plate vii., Fig. 81.)

Rather widely oval, convex; black above; elytra with four orange-red plagia, two at shoulders, two on apical declivity; antennae and tarsi red; under side dark reddish brown; coxae, greater part of metasternum and the post intercoxal plate paler red. Head and antennae as in *N. quadriplagiatus* Cart.

Pronotum with the apex more strongly sinuate, the anterior angles more pronounced, the external border more elevated; the surface uniformly punctate, more densely and finely so than in *quadriplagiatus*, widest behind middle, sides subsinuate behind. (In *quadriplagiatus* widest at middle, without sinuation behind). A transverse sulcus near base.

Elytra, obovate, strongly convex; lateral margin narrowly horizontal and minutely crenulate; striate punctate, the strial punctures smaller than in *quadriplagiatus* and the intervals, almost impunctate, without the pronounced wrinkles of that species.

The under side is so different that it is most clearly described by the following comparison:—

dorrigoensis.	*quadriplagiatus.*
Prosternum.	
Posterior process rather widely truncate, with sharp angles; almost impunctate, a few shallow depressions.	Posterior process rounded; coarsely punctate.
Metasternum	
Non-sulcate, nitid and almost impunctate; hind margin sharply and widely angulate in middle.	Longitudinal sulcus in middle; coarsely punctate; hind margins undulate, scarcely angulate in middle.
Abdomen.	
Sub-nitid and finely punctate in middle, velvety pubescent at sides and apex; apical segment non-sulcate.	Strongly punctate in middle, velvety pubescent at sides and apex, apical segment sulcate.

Dimensions: 3.4 x 1.7 mm.

Habitat: New South Wales, Dorrigo (Mr. W. Heron).

Six examples were recently sent us (December, 1928) by Mr. Heron amongst other DRYOPIDAE. The species is very like *N. quadriplagiatus* as to the upper surface, especially in the strong convexity of the elytra behind the base with the corresponding steep basal declivity; but it is more robust, with longer and much thicker legs, and with finer sculpture; also the elytral plagia are smaller than in the Victorian species. As shown above, the most marked distinctions lie in the very different under surface.

Type in Coll. Carter.

Curiously, one example sent by Mr. Heron is inseparable from *N. quadriplagiatus* Cart., having the coarser upper surface, pronotum widest at middle, black and strongly punctate under surface, but having the hind margin of the metasternum as in *dorrigoensis*. We can only consider this as a slight variety of *quadriplagiatus*.

We have a single female example from Galston, New South Wales, which again is very slightly differentiated from Victorian examples of *quadriplagiatus* by larger size, paler under surface and legs; prosternal

process clearly rounded and narrowed at apex; and the hind margin of metasternum as in the Dorrigo example.

In the original description of *quadriplagiatus*, Proc. Linn. Soc. N.S.W., 1926, 62, the word "concavity" (of the elytra) is erroneously printed for "convexity."

Notriolus galstonius *sp. nov.*

(Plate vii., Fig. 82.)

Rather widely obovate, nitid black; elytra with four spots rufo-flavous, two at shoulders, two sub-apical; antennae and tarsi yellow, tibiae red; underside black.

Head and pronotum densely punctate, the latter very convex, widest behind middle, the sides scarcely or very feebly sinuate in front and behind; apex less sinuous than in *dorrigoensis*, the anterior angles less strongly produced than in this species or in *quadriplagiatus*.

Elytra obovate, very convex; lateral margins narrowly horizontal and minutely crenulate; striate-punctate, the striae shallower and the seriate punctures smaller than in *quadriplagiatus* Cart.

Prosternal process much longer and narrower than in *quadriplagiatus*, its apex almost cylindric, otherwise the underside not very dissimilar from that species.

Dimensions: 3.3 x 1.6 mm.

Habitat: New South Wales, Galston (Messrs. J. Armstrong, E. H. Zeck and H. J. Carter).

Fourteen examples have been examined. This was at first confused with the Victorian *quadriplagiatus*, but it is distinguished by rather larger size, more nitid surface, finer seriate punctures and an entirely differently shaped prosternum. The elytral plagae are much smaller, the sub-apical spots tending to disappear altogether.

Dorrigoensis is even more strongly differentiated by the colour of the underside, the truncate prosternal process and the markedly hooded prosternum.

Holotype in Coll. Carter.

Notriolus humeralis *sp. nov.*

(Plate iv., Fig. 25.)

Widely oval, very nitid black, underside brown, elytra with large shoulder spot white, antennae and tarsi red.

Head and pronotum finely and evenly punctate; antennae fine and linear.

Prothorax uniformly convex (without transverse division), widest near middle, thence narrowing to apex and sub-sinuately to base, the latter wider than apex and sub-truncate or very feebly sinuate, sides with narrow raised border, narrowly sulcate within this, anterior angles acute, posterior obtuse; disc with short transverse fovea near base at middle.

Elytra shortly obovate (sometimes ovate), wider than prothorax at base, shoulders widely rounded, humeral callus pale, this emphasized by an oblique depression following the fifth stria; striate-punctate, the seriate punctures round and regular, intervals flat, distinctly but finely punctate. Underside very coarsely punctate throughout.

Dimensions: 3.6 x 1.8 mm.

Habitat: New South Wales, Eccleston, Allyn River; also the Williams River, at Dungog and Dorrigo (W. Heron).

Eighteen examples from the first and five from the second district show a distinct species, nearest in form and facies to *H. barretti* Cart. The

latter is distinguished by the absence of the shoulder spot, the sub-laevigate elytral intervals and the less coarsely punctate underside.

Type in Coll. Carter.

N.B.—The single specimen lately included under *H. barretti* Cart. as var. *basalis* is really *N. humeralis.*

NOTRIOLUS SUBPLANATUS *sp. nov.*

(Plate vii., Fig. 83.)

Widely ovate, convex, nitid black, antennae and tarsi red.

Head and pronotum finely and closely punctate.

Prothorax widest at base, sides parallel for a short way, thence gently converging to apex; margins rather narrowly explanate, anterior angles lightly produced and acute; posterior sharply rectangular; basal third of disc delimited by a light transverse ridge; medio-basal area flattened. (In some examples the flattened area reduced to two shallow depressions).

Scutellum sub-triangular, sides rounded.

Elytra very convex and widely oval, sides widening from the pronotal junction, widest at middle, a narrow horizontal margin, finely serrulate behind; striate-punctate, with ten rows of small punctures in lightly defined striae, intervals flat, very minutely wrinkled, scarcely punctate.

Prosternum unevenly, not closely punctate, its process wide and widely rounded (sub-truncate) at apex, mesosternum rather coarsely punctate and channelled, abdomen opaque and finely punctate.

Dimensions: 3 x 1.5 mm. (approximately).

Habitat: Lake Barrina district, Atherton Tablelands, Queensland (Mr C. Barrett).

We are indebted to that keen naturalist and author, Mr. C. Barrett, for nine examples of this addition to the family. It is easily recognized by the combination of nitid surface, wide and convex form and the characteristic flattening of the basal area of the pronotum—this last accentuated by the transverse ridge that forms its anterior limit.

Holotype in Coll. Carter.

NOTRIOLUS VICTORIAE *sp. nov.*

(Plate ii., Fig. 12.)

Oval moderately convex, black moderately nitid, elytra with four yellow or pale markings, two at base almost extending across elytra, two on apical declivity; antennae and tarsi red.

Head and pronotum finely and densely punctate.

Prothorax widest at posterior third, thence gradually narrowing in a curve to apex, more strongly so at base, without distinct sinuation; anterior angles advanced, deflected and acute, posterior obtuse; disc with a defined transverse depression near base.

Scutellum sub-circular.

Elytra elongate and slightly obovate, wider than prothorax at shoulders, greatest convexity at middle, margins narrowly horizontal and minutely crenulate; striate-punctate, the striae moderately deep, seriate punctures large at sides, perceptibly smaller towards suture; intervals flat, punctate and minutely and sparsely pustulose; underside coarsely punctate; pro- and mesosternum with fine pustules between the punctures; prosternal process rounded at apex, post intercoxal plate triangular.

Dimensions: 4.3 x 1.9 mm.

Habitat: Victoria, Traralgon, Tyers River (C. Barrett); Upper Yarra, also Lorne (C. Barrett); Mount Kosciusko (H. J. Carter).

Thirty examples examined, some of which had been confused with

specimens of *N. quadriplagiatus* Cart., which it somewhat resembles. It is different from that species in the following characters: Size larger, less convex and less nitid, pronotum more elongate with greatest width behind the middle, elytral striae less defined, the seriate punctures much larger at sides than middle, and the elytral intervals are sub-asperate, due to the presence of minute pustules amongst the punctures. The underside contains even more definite differences as follows:—

	victoriae.	*quadriplagiatus.*
(a)	Pro- and mesosternum pustulose.	non-pustulose.
(b)	Prosternal process rounded at apex.	sub-truncate at apex, its sides straighter.
(c)	The punctate plate between, hind-coxae triangular.	semi-circular.
(d)	Last abdominal segment longitudinally channelled.	not channelled.

It is distinguished from *maculatus* by its wider form and more nitid surface, the pronotum especially more widely rounded and explanate; the elytral basal markings sub-fasciate (in *maculatus* mere shoulder spots) with different elytral sculpture and much finer punctures of the underside. (In *maculatus* the mesosternum has coarse distant punctures).

Holotype in Coll. Carter.

N.B.—A var. of *maculatus* from Dorrigo, New South Wales, is without the apical maculae.

COXELMIS *gen. nov.*

Glabrous.

Head partially retractile; maxillary palpi 4-art.; antennae linear, long; extending at rest beyond the base of prothorax.

Pronotum sub-conic, uni- or bilobate, without sub-lateral sulcus, widest at base, sides in front deflexed and embracing prosternum; base feebly bisinuate; elytra striate-punctate, latero-apical margins entire, apices separately pointed; prosternal process short and truncate at apex; fore coxae as widely separated as the middle coxae; metasternum channelled.

Genotype: *Elmis novemnotata* King.

Table of Species.

1. Elytra having 5 to 8 linear pale markings. . . . . 2.
   Elytral markings confined to humeri. . . . . *trinotata* n.sp.
2. Pronotum with strong transverse sulcus. . . . . *v. fasciata* Lea. (pl. iii., fig. 21.)
   Pronotum without transverse sulcus. . . . . *novemnotata* King (pl. iv., fig. 30.)

In *novemnotata* the pronotum is quite devoid of any transverse sulcus.

In *trinotata* the pronotum has a partial or lightly impressed transverse sulcus.

COXELMIS TRINOTATA *sp. nov.*

(Plate iv., Fig. 28.)

Narrowly elongate, tapering in front and behind, above nitid black, apex of pronotum red, a large shoulder spot on each elytron flavous, underside reddish brown, antennae, tarsi, knees and underside of tibiae and parts of underside red or flavous.

Head about as wide as apex of prothorax, apparently not retractile beyond a frontal ridge, eyes not prominent, antennae unusually long, fili-

form, extending beyond the base of pronotum, two basal segments stout 11th longer than the rest and lanceolate.

Prothorax sub-bilobate, narrowly elongate, the convex anterior lobe separated by a lightly impressed sinuate transverse impression, widest near the base, anterior angles unseen from above, base bisinuate, hind angles sub-acute, sides slightly rounded on posterior lobe, margins not explanate and only visible (from above) near base; disc densely covered with shallow punctures, a transverse sulcus near base.

Elytra considerably wider than prothorax at base, shoulders rounded, sides a little compressed before and feebly widened behind the middle; apices separately pointed; finely striate-punctate, intervals flat and covered with punctures and wrinkles, the punctures in the shallow striae scarcely distinguishable from the interstitial.

Prosternum coarsely punctate, its posterior process wide and truncate, meso- and metasternum successively less coarsely punctate, post- intercoxal process oval with a fringe of golden hair, abdomen finely punctate.

Dimensions: 3.3 x 1.2 mm. (approximately).

Habitat: New South Wales, Galston Gorge and Cox River, Blue Mountains (H. J. Carter).

William Ferguson, son of Dr. E. W. Ferguson, and one of us took three examples of this distinct species on January, 1927, in Galston Creek; also one taken in the Cox River, January 8th. Also sent from East Dorrigo by Mr. W. Heron.

It is near *C. novemnotata* King, but is variously distinguished by its more navicular form, the sub-bilobate pronotum, the different markings and stronger sculpture of the upper surface. Both species have separately pointed apices and unusually long antennae.

Holotype in Coll. Carter.

Coxelmis (*Elmis*) *v-fasciata* Lea. Mr. Lea has courteously supplied us with a slightly damaged co-type, besides lending us, later, a second example in good condition. Amongst our very long series of *C. novemnotata* King, we find four examples which agree with Lea's species, except in their darker colour—especially of the underside; and the less distinct, though similar, pattern of the elytra. As this pattern is extremely variable in *novemnotata* (in one example the elytra are without any pale lines) we consider these four as slight variations of the typical Tamworth species.

Helmis pallidipes Cart. is clearly a *Stenelmis* (pl. ii., fig. 9).

Neosolus *gen. nov.*

Elliptic, head retractile, antennae filiform, 11-segmented, the two basal segments slightly widened, the apical pointed and about twice as long as the tenth.

Pronotum sub-oblong, apex convex and produced in middle, sides nearly straight, anterior angles declinate; disc with a moderately deep medial sulcus, and a sub-lateral carina extending throughout parallel to the sides.

Scutellum oval and convex.

Elytra with sub-lateral carina similar to the pronotal and continuous with it; disc with lightly defined sculpture and a sub-granulose, shagreened surface.

Prosternum moderately long, its hind process bluntly rounded, metasternum with short medial carina at bottom of a longitudinal depression. Legs moderately long, fore tibiae without tomentum.

In general form like *Esolus*, but its strongly channelled pronotum, different scutellum and elytral sculpture distinguish it. From *Austrolimnius* it differs in its narrower form, the sub-quadrate prothorax and the

granulose elytra with indistinct seriate punctures. We have not been able to see clearly the articulation of the palpi.

Genotype: *N. tropicus* Cart.

NEOSOLUS TROPICUS *sp. nov.*

(Plate vi., Fig. 77.)

Ovate, opaque black, apex of pronotum, antennae, tibiae and tarsi pale red.

Head vertical, narrower than apex of prothorax, antennae filiform, not enlarged apically, the 11th segment finely pointed.

Prothorax sub-quadrate, a little narrowed and bent down at apex, anterior angles unseen from above, posterior sub-rectangular, base subtruncate (very feebly sinuate), sides nearly straight on posterior half, slightly converging to apex; medial sulcus deep, extending to basal, but not quite to apical margin; sub-explanate margins with well defined carina on inside; extreme border as seen from below, minutely serrate; disc minutely granulose.

Scutellum oval, raised and nitid.

Elytra oval, scarcely enlarged behind middle, of same width as prothorax at junction, soon widening behind this, rather bluntly narrowed at apex, extreme border (only as seen from below) minutely serrulate; with two fine lateral ridges; a longitudinal carina continuous with pronotal carina, soon broken up into a line of granules, these indistinct towards apex; between this and suture two shallow, wide ill-defined striae, the outer one (at least) bordered by a row of granules; general surface rough, sub-granulose. Underside rather strongly granulose, the planate medial area more coarsely so than the exterior parts.

Dimensions: 1 mm. long.

Habitat: Northern Territory, Adelaide River (British Museum).

Var. *asper* (pl. vi., fig. 80).

One example differs from the other two in the stouter antennae and the more roughly sculptured surface of pronotum and elytra. The quite strongly serrulate margins of these are evident from above; the two medial elytral carinae, one on each elytron, are less broken up (continuous at least on basal half) the space between these and suture containing a longitudinal depression on each side of suture, the sub-sutural surface transversely wrinkled.

An examination of further material will probably show this to be a distinct species.

The minute size (little more than half the length of *A. politus* or *A. victoriae*, the opaque surface and narrower form easily distinguish this species.

Type series: Two on card and variety in the British Museum.

Dryopidae taken during the last week of October, 1926, in the Allyn, Williams, Paterson, and Barrington Rivers and Massie's Creek, Eccleston district, N.S.W.

Hydrethus australis King, *Stetholus elongatus* n.sp., *Austrolimnius montanus* King, *A. politus* King, *Kingolus cupreus* Cart., *K. flavoplagiatus sp. nov., K. flavosignatus sp. nov., Simsonia hopsoni sp. nov., K. metallicus* King, *K. quatuormaculatus* King, *K. tinctus sp. nov., K. tyrrhenus sp. nov., Simsonia irregularis sp. nov., S. leai sp. nov., S. purpurea* Cart., *Notriolus allynensis* Cart., *N. barretti* Cart., *N. humeralis sp. nov., N. maculatus* Cart., *Coxelmis novemnotata* King, *C. v. fasciata* Lea, *var.*

N.B.—Massie's Creek joins the Allyn River at Eccleston. The Allyn flows into the Paterson, while both the Paterson and Williams are tributaries of the Hunter River. The Barrington is an affluent of the Manning River [Vide Sloane's map in Proc. Linn. Soc. N.S.W., 1916, p. 197].

CHECK LIST OF AUSTRALIAN DRYOPIDAE.

Sub-family Dryopinae.

Hydrethus (*Lutochrus*) *australis* King, Trans. Ent. Soc. N.S.W., 1865, 159.
H. leai Cart., Proc. Linn. Soc. N.S.W., 1926, 64.

Sub-family Helminae.

Austrolimnius luridus n.sp.
Austrolimnius (*Elmis*) *montanus* King, Trans. Ent. Soc. N.S.W., 1865, 160.
A. (*Elmis*) *politus* King, l.c., 160.
A. victoriensis, sp. nov.
Stenelmis (*Helmis*) *pallidipes* Cart., Proc. Linn. Soc. N.S.W., 1926, 63.
Kingolus (*Helmis*) *aeratus* Cart., l.c., 62.
K. cupreus Cart., l.c., 507.
K. flavoplagiatus, sp. nov.
K. flavosignatus, sp. nov.
K. heroni, sp. nov.
K. (*Elmis*) *metallicus* King, Trans. Ent. Soc. N.S.W., 1865, 160.
K. (*Limnius*) *quattuormaculatus* King, l.c., 101.
K. tinctus, sp. nov.
K. tyrrhenus, sp. nov.
K. yarrensis, sp. nov.
Simsonia (*Helmis*) *angusta* Cart., Proc. Linn. Soc. N.S.W., 1926, 62.
S. hopsoni, sp. nov.
S. irregularis, sp. nov.
S. leai, sp. nov.
S. (*Helmis*) *nicholsoni* Cart., Proc. Linn. Soc. N.S.W., 1926, 61.
S. (*Helmis*) *purpurea* Cart., l.c., 508.
S. (*Elmis*) *tasmanica* Blkb., l.c., 1894, 94.
S. vestita, sp. nov.
S. (*Helmis*) *wilsoni* Cart., Proc. Linn. Soc. N.S.W., 1926, 64.
Notriolus (*Helmis*) *allynensis* Cart., l.c., 61.
N. (*Helmis*) *barretti* Cart., l.c., 506.
N. dorrigoensis, sp. nov.
N. galstonensis, sp. nov.
N. humeralis, sp. nov.
N. (*Helmis*) *maculatus* Cart., Proc. Linn. Soc. N.S.W., 1926, 507.
N. (*Helmis*) *quadriplagiatus* Cart., l.c., 63.
N. (*Helmis*) *simsoni* Grouv., Not. Leyd. Mus., 1896, 49.
N. subplanatus, sp. nov.
N. victoriae, sp. nov.
Coxelmis (*Elmis*) *novemnotata* King, Trans. Ent. Soc. N.S.W., 1865, 159.
C. trinotata, sp. nov.
C. (*Elmis*) *V. fasciata* Lea, Proc. Linn. Soc. N.S.W., 1894, 590.
Neosolus tropicus, gen. et sp. nov., var. *asper.*
Stetholus elongatus, gen. et sp. nov.

EXPLANATION OF PLATES.

Plate I.

1. *Kingolus flavosignatus.*
2. *Kingolus (Simsonia) leai.*
3. *Kingolus flavoplagiatus.*
4. *Kingolus cupreus.*
5. *Kingolus quattuormaculatus.*
6. *Kingolus tyrrhenus.*
7. *Kingolus tinctus.*
8. *Kingolus metallicus.*

Plate II.

9. *Stenelmis pallidipes.*
10. *Austrolimnius victoriensis.*
11. *Austrolimnius montana.*
12. *Notriolus victoriae.*
13. *Simsonia angusta.*
14. *Simsonia irregularis.*
15. *Austrolimnius politus.*
16. *Stetholus elongatus.*

Plate III.

17. *Hydrethus australis.*
18. *Simsonia tasmanica.*
19. *Simsonia vestita.*
20. *Simsonia wilsoni.*
21. *Coxelmis V-fasciata.*
22. *Simsonia purpurea.*
23. *Simsonia nicholsoni.*
24. *Simsonia hopsoni.*

Plate IV.

25. *Notriolus humeralis.*
26. *Notriolus maculatus.*
27. *Notriolus allynensis.*
28. *Coxelmis trinotata.*
29. *Notriolus quadriplagiatus.*
30. *Coxelmis novemnotata.*
31. *Notriolus barretti.*
32. *Notriolus simsoni.*

Plate V.

Sternal processes, magnified 42 diameters.

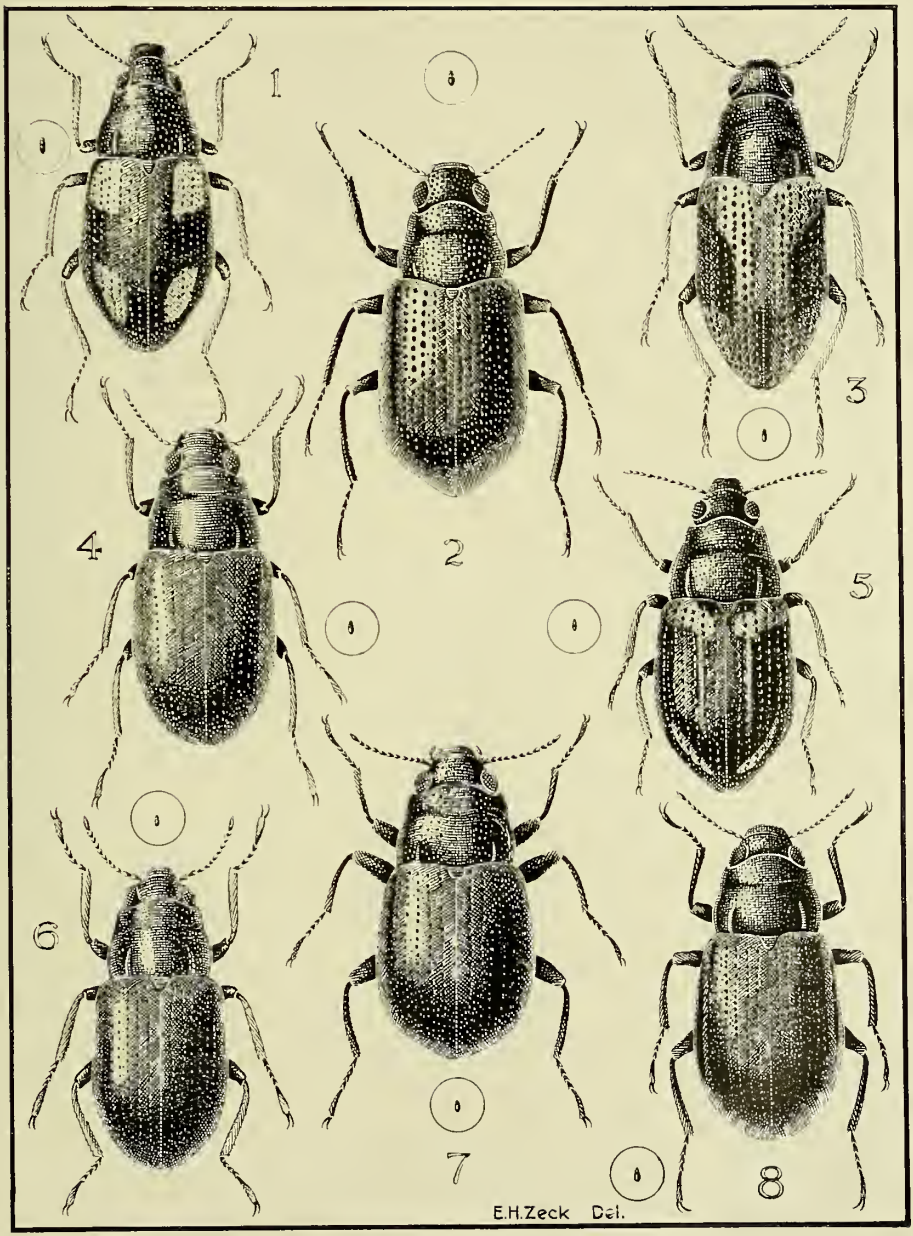
33. *Hydrethus australis.*
34. *Austrolimnius politus.*
35. *Austrolimnius luridus.*
36. *Austrolimnius victoriensis.*
37. *Austrolimnius montanus.*
38. *Kingolus flavosignatus.*
39. *Stenelmis pallidipes.*
40. *Kingolus heroni.*
41. *Kingolus aeratus.*
42. *Kingolus cupreus.*
43. *Kingolus flavoplagiatus.*
44. *Kingolus metallicus.*
45. *Simsonia leai.*
46. *Kingolus tinctus.*
47. *Kingolus quattuormaculatus.*
48. *Kingolus tyrrhenus.*
49. *Simsonia wilsoni.*
50. *Simsonia purpurea.*
51. *Simsonia angusta.*
52. *Simsonia*, sp.n. (? *purpurea*, var.)
53. *Simsonia hopsoni.*
54. *Simsonia tasmanica.*
55. *Simsonia nicholsoni.*
56. *Simsonia vestita.*
57. *Simsonia irregularis.*
58. *Notriolus humeralis.*
59. *Notriolus victoriae.*
60. *Notriolus barretti.*
61. *Notriolus barretti, var.*
62. *Notriolus dorrigoensis, var.*
63. *Notriolus quadriplagiatus.*
64. *Notriolus maculatus.*
65. *Notriolus allynensis.*
66. *Notriolus simsoni.*
67. *Notriolus subplanatus.*
68. *Coxelmis novemnotata.*
69. *Coxelmis trinotata.*
70. *Coxelmis trinotata.*
71. *Coxelmis V-fasciata.*
72. *Neosolus tropicus.*
73. *Stetholus elongatus.*
74. *Neosolus tropicus*, var. *asper.*

Plate VI.

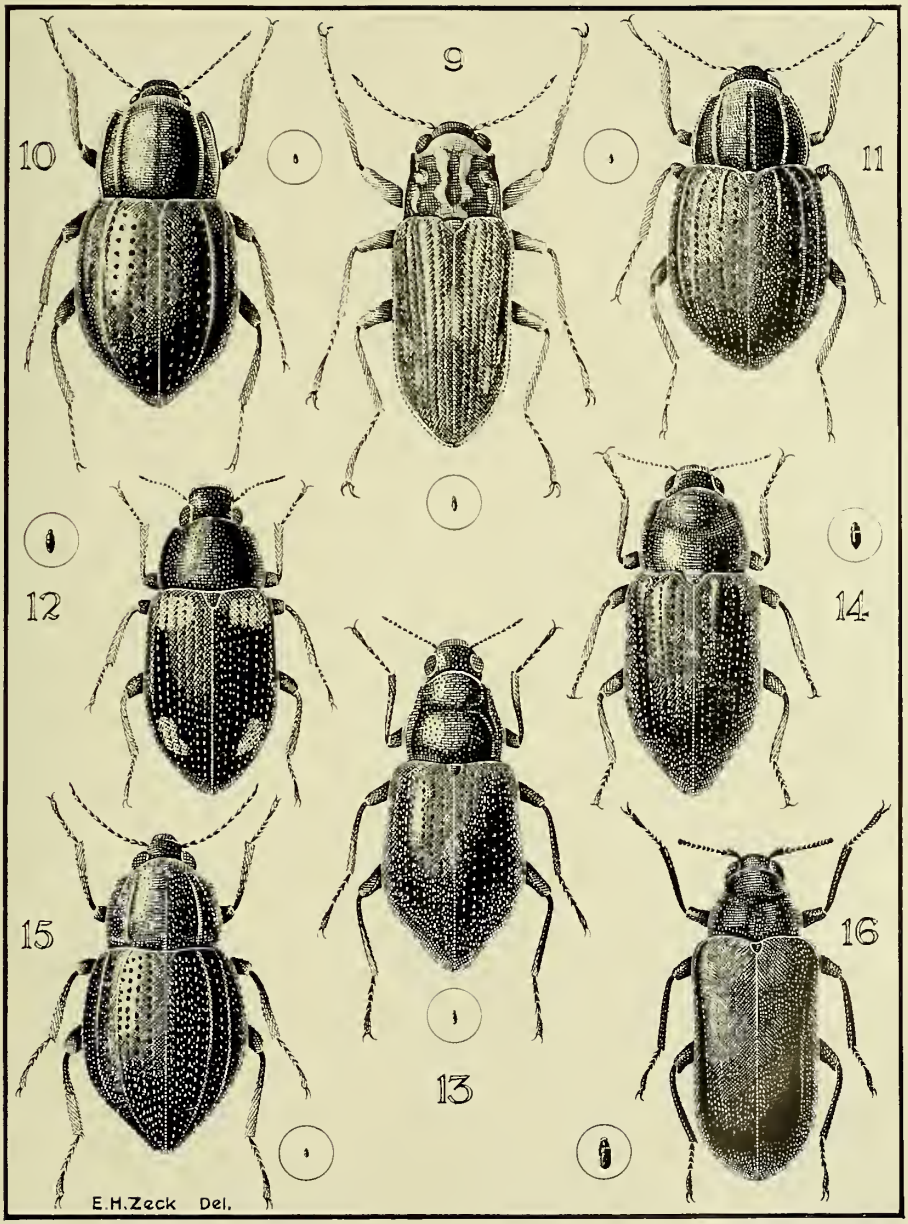
75. *Kingolus heroni.*
76. *Kingolus aeratus.*
77. *Neosolus tropicus.*
78. *Austrolimnius luridus.*
79. *Kingolus yarrensis.*
80. *Neosolus tropicus* var. *asper.*

Plate VII.

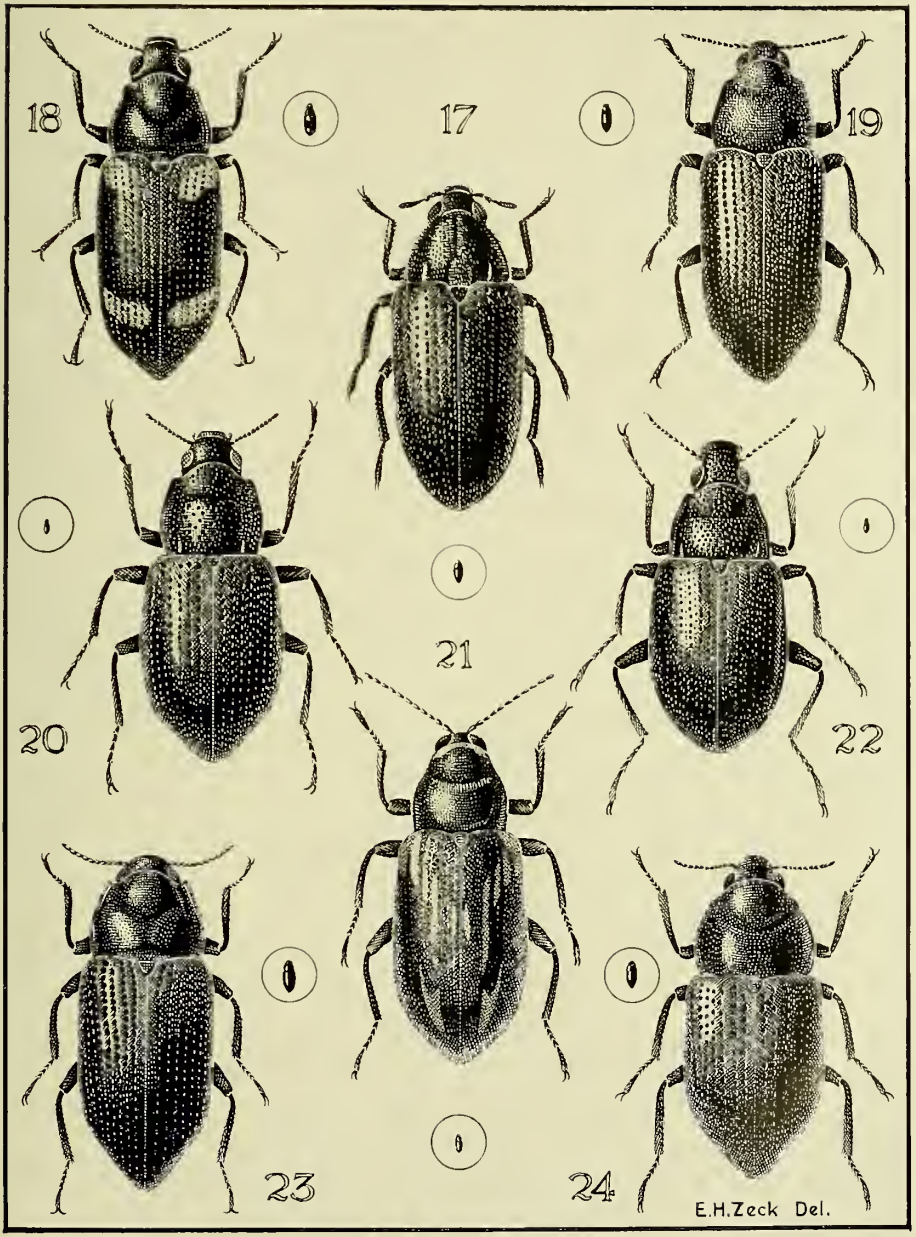
81. *Notriolus dorrigoensis.*
82. *Notriolus galstonius.*
83. *Notriolus subplanatus.*
84. Sternal process of *Notriolus dorrigoensis.* x 56.
85. Sternal process of *Notriolus galstonius.* x 56.
86. Sternal process of *Kingolus aeratus.* x 56.
87. Sternal process of *Kingolus yarrensis.* x 56.
88. Antenna of *Stetholus elongatus.* x 50.
89. Antenna of *Coxelmis trinotatus.* x 50.
90. Antenna of *Hydrethus australis.* x 50.
91. Antenna of *Simsonia vestita.* x 50.
92. Antenna of *Austrolimnius politus.* x 50.
93. Antenna of *Kingolus metallicus.* x 50.
94. Middle tibia of male *Austrolimnius victoriensis.*
95. Maxillary palpus of *Kingolus metallicus.*
96. Maxillary palpus of *Austrolimnius politus.*



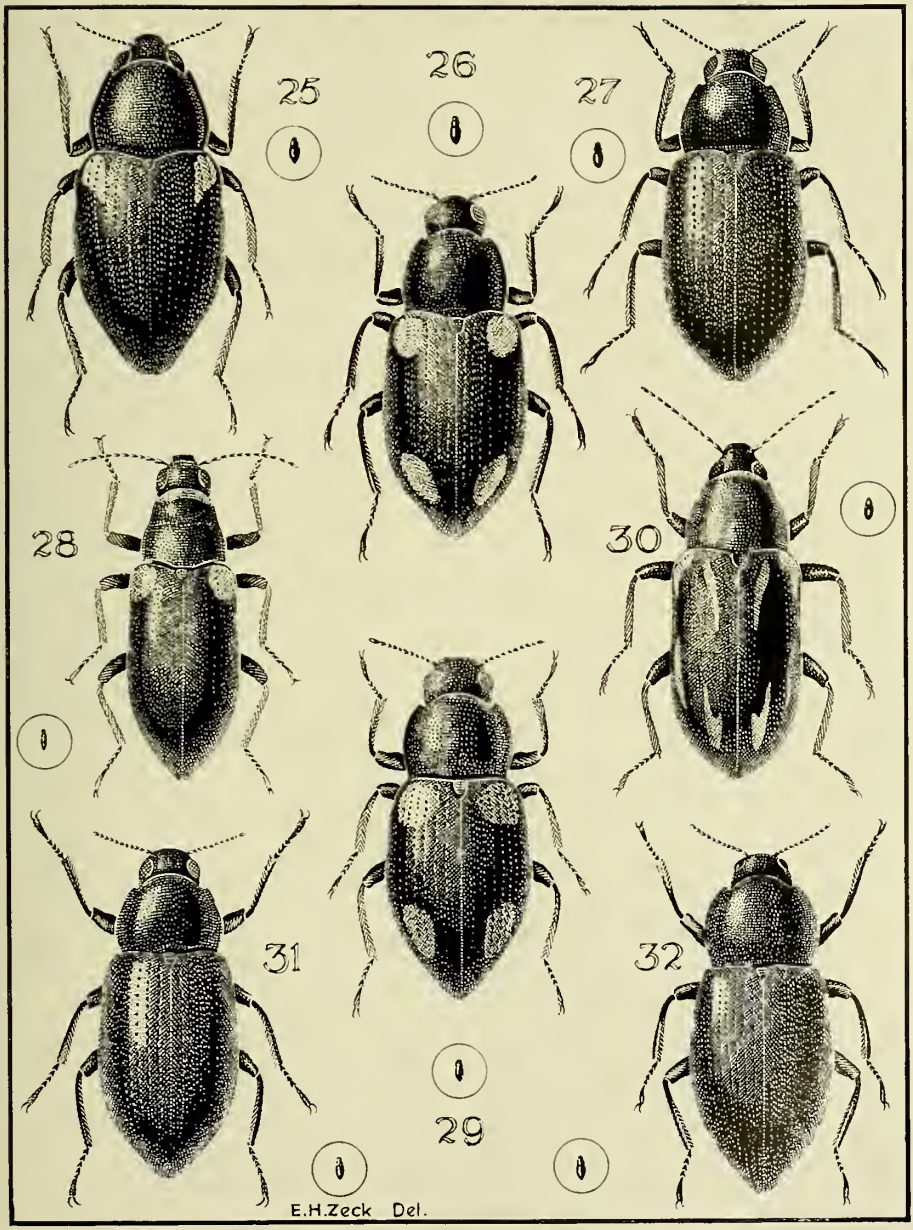
Australian Dryopidae.



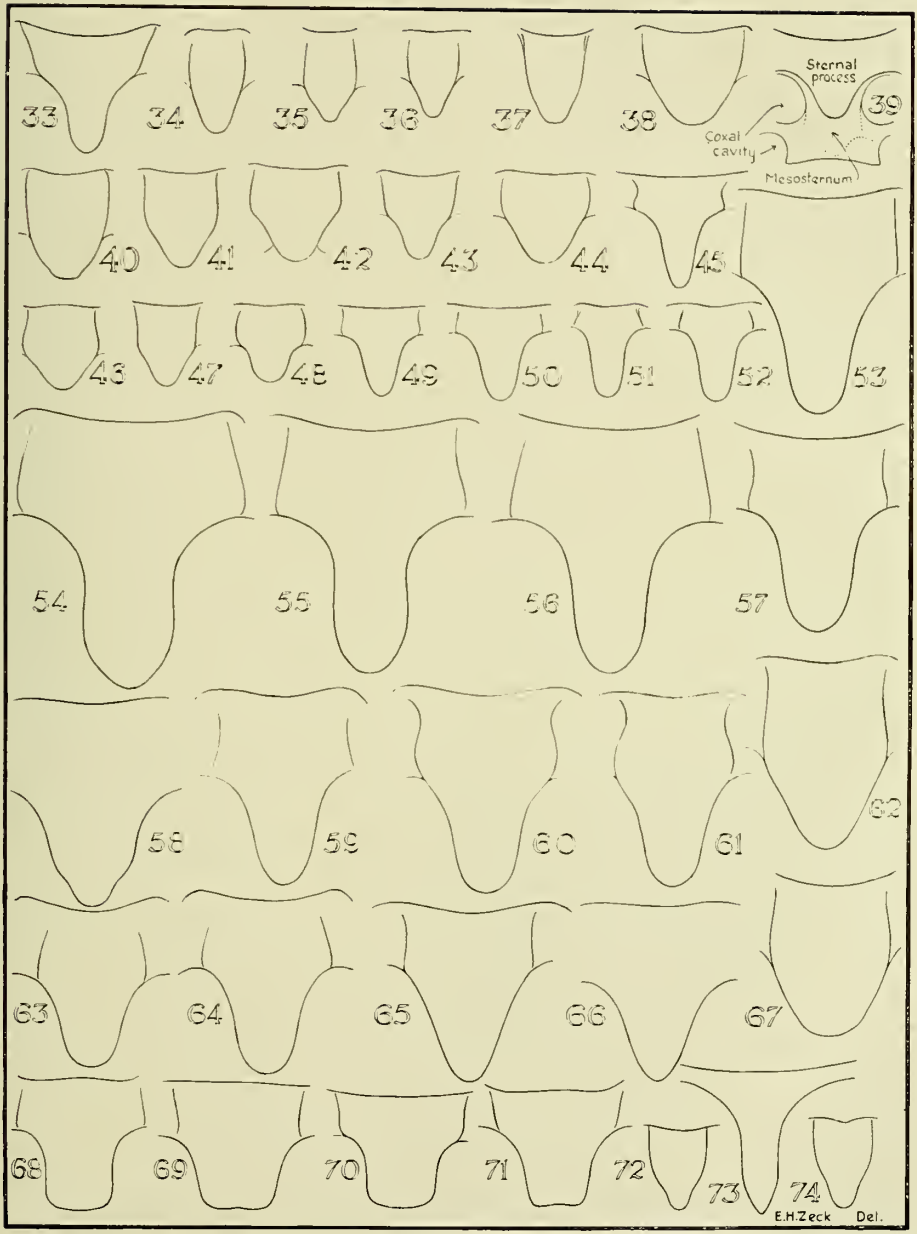
Australian Dryopidae.



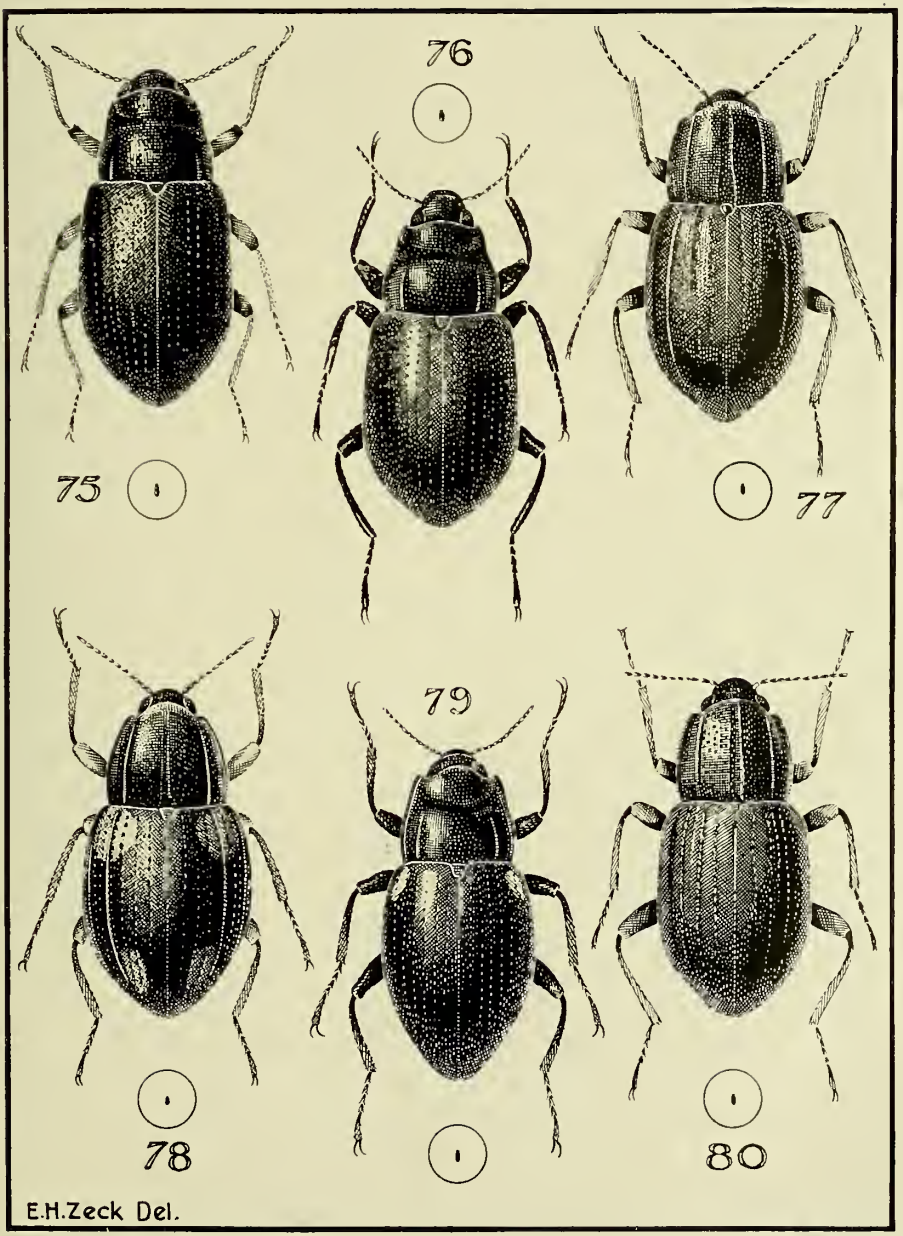
AUSTRALIAN DRYOPIDAE.



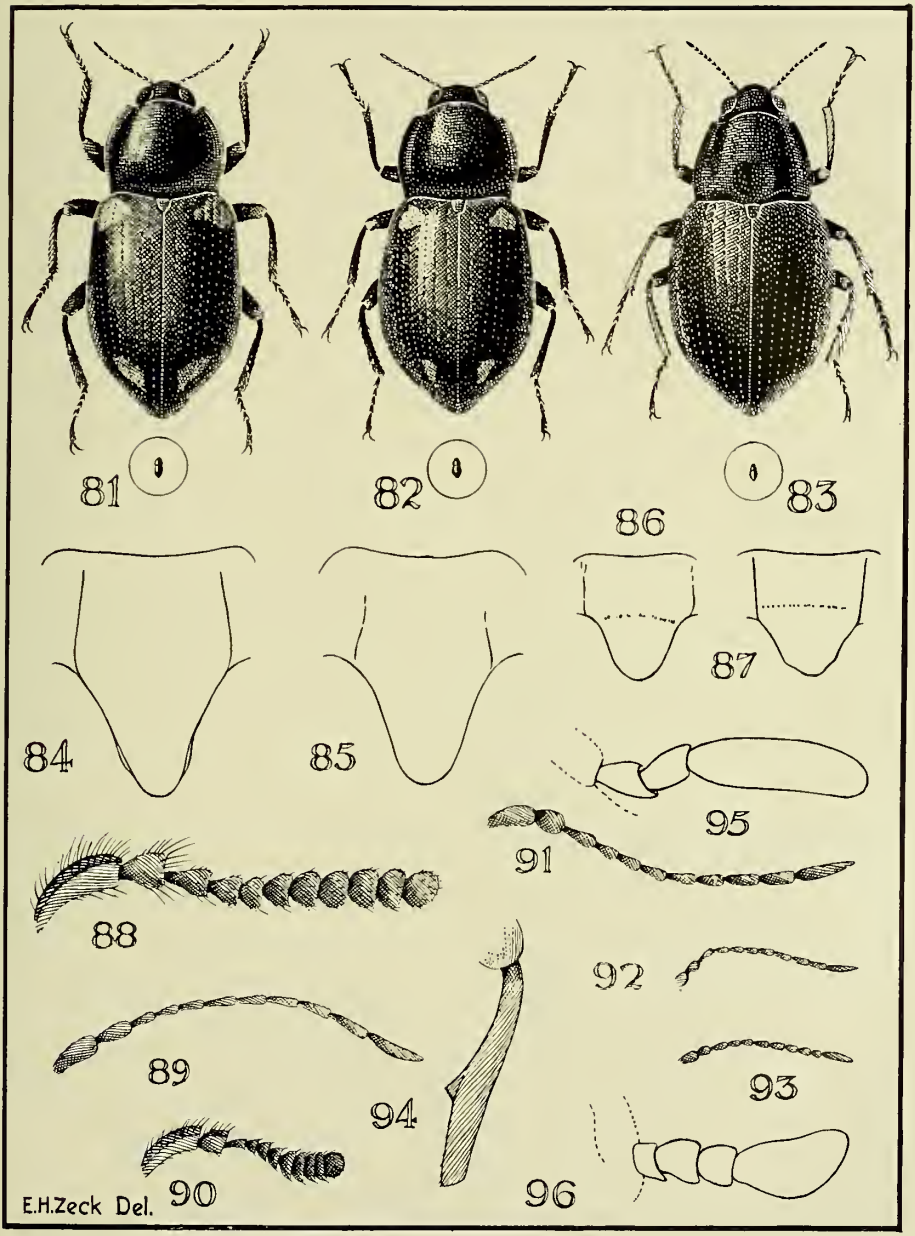
Australian Dryopidae.



Prosternal processes of Australian DRYOPIDAE.



AUSTRALIAN DRYOPIDAE.



AUSTRALIAN DRYOPIDAE.